



October 28, 2003

Barbara Bradley
Advanced Onsite Systems, Inc.
1704 Summit Drive
Escondido, CA 92027-4728

Subject: Review of Tentative Order No. R9-2003-0228; Waste Discharge Requirements for El Morro Trailer Park, Crystal Cove State Park, Orange County, California

Dear Ms. Bradley:

This letter presents the results of my review of proposed Waste Discharge Requirements, Tentative Order No. R9-2003-0228, prepared by the San Diego Regional Water Quality Control Board for the El Morro Trailer Park in Orange County, California. The review was conducted at your request to obtain a third party expert opinion on the reasonableness and technical justification for the various prohibitions and discharge specifications contained in the proposed order.

It is my understanding that the El Morro Trailer Park (EMTP) is an existing facility consisting of 300 mobile home units and one cottage, and has been in existence for more than 40 years. It is located within the Crystal Cove State Park, on lands managed by the California Department of Parks and Recreation since 1982. Treatment and disposal of domestic sewage is accomplished with septic tanks and subsurface seepage pits and leachfield systems, for which the Regional Water Board has not previously issued Waste Discharge Requirements (WDR). Tentative Order No. R9-2003-0228 is intended to bring the facility under Regional Water Board regulatory oversight.

As a matter of background, I am a Registered Civil Engineer in California, and a Principal with the firm of Questa Engineering Corporation. I have spent my entire 30-year professional career working in the field of water quality, wastewater and water resources engineering and management in California. This included six years with the State Water Resources Control Board and North Coast Regional Water Quality Control Board in the 1970s, where I was responsible for drafting the Water Quality Objectives section of the originally-adopted Basin Plans (all nine regions), and the Individual Waste Treatment and Disposal Systems Policy for the North Coast Region's Basin Plan. I have worked as a private consultant since 1980, specializing in the area of onsite and small-scale wastewater management. During this time I have conducted dozens of sanitary surveys for unsewered communities throughout California, developed practical guidelines for cumulative impact assessments, completed numerous planning, feasibility and design studies for decentralized wastewater projects, and served as an expert witness on numerous occasions. In 1993-94 I served as a member of and spokesperson for the State Water Board's Technical Advisory Committee for Onsite Sewage Disposal Systems, and over the past two years as an industry Stakeholder representative for the AB 885 septic system rule making process. I am a founding Board Member and current Vice President of the California Onsite Wastewater Association. A copy of my resume is attached.

Information Reviewed

In the matter of the El Morro Trailer Park, my work included review of information contained in the following documents:

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1. "Waste Discharge Requirements (Tentative Order No. R9-2003-0228) and Cease and Desist Order (Tentative Order No. R9-2003-0285) for California Department of Parks and Recreation, Crystal Cove State Park, El Morro Trailer Park, Orange County", October 3, 2003, San Diego Regional Water Quality Control Board.
2. "Analysis and Report of Water Quality Data and SDRWQCB Tentative Orders for El Morro Trailer Park", October 13, 2003, by Barbara Bradley, Advanced Onsite Systems, Inc, and Joan Brackin, TAO Technologies, Inc.
3. "Crystal Cove State Park Morro Creek Wastewater System Report", May 2001, by PSOMAS for State of California Department of Parks and Recreation.
4. "Report of Sampling and Analysis for the Crystal Cove State Park El Morro Mobile Home Park Facility", September 2002, by PSOMAS for State of California Department of Parks and Recreation.
5. "Water Quality Control Plan for the San Diego Basin (Basin Plan)", May 1998, California Regional Water Quality Control Board, San Diego Region.
6. "Porter Cologne Water Quality Control Act", 1996.
7. "Water Quality Order No. 97-10-DWQ, General Waste Discharge Requirements for Discharges to Land by Small Domestic Wastewater Treatment Systems", November 1997, State Water Resources Control Board.
8. Various policies, guidelines, criteria and orders pertaining to onsite wastewater treatment and disposal systems in other Water Quality Control Board Regions in California.

In the course of my review I did not make a site inspection of the facility or the surrounding area. I also did not have an opportunity to review any supporting analysis or report that may have been prepared by the Regional Water Board staff concerning the rationale for various provisions contained in the proposed WDR.

General Comment

As a general observation, the prohibitions and discharge specifications contained in the proposed order are far more stringent in many respects than any requirements I am familiar with for other comparable septic tank-soil absorption systems in California. Many of the requirements appear to be impossible or impractical to comply with. As such they effectively would amount to a prohibition of waste disposal, without the required supporting determination mandated by California Water Code, Chapter 4, Article 5, Sections 13280 and 13281. In order to prohibit the use of subsurface wastewater disposal systems, the Section 13280 of the Water Code requires that such a prohibition be "... supported by substantial evidence in the record that discharge of waste from such disposal systems will result in violation of water quality objectives, will impair present or future beneficial uses of water, will cause pollution, nuisance, or contamination, or will unreasonably degrade the quality of an waters of the state." Having reviewed the proposed WDR and the various water quality data that have been collected, substantial evidence does not exist to support a prohibition of waste discharge from the El Morro Trailer Park. In my experience, establishment of unattainable waste discharge requirements for an existing, long-

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standing domestic wastewater system such as this would be considered an unreasonable application of the regulatory process. Additionally, as described in my specific comments that follow, there is very little supporting technical justification for most of the numerical limits contained in the proposed order.

Beneficial Use of Groundwater for Municipal-Domestic Water Supply

Finding #15 indicates that the Basin Plan designates the groundwater in the project area (San Joaquin Hills Hydrologic Sub-Area), on the east side of Pacific Coast Highway (PCH) to be suitable for municipal and domestic water supply uses; but that this designation does not apply on the west side of the highway. According to the water quality data supplied to the Regional Board by PSOMAS (2002), the background water quality data for the area indicates a naturally occurring level of total dissolved solids (TDS) in excess of 3,000 mg/L on the east side as well as the west side of PCH. This is apparent from the surface water sampling results at upstream control stations EB-1 and EB-2, which show TDS concentrations ranging from 1,900 to 5,800 mg/L. The sampling results at these control stations are largely a reflection of groundwater return flow. The high TDS concentrations are attributable to the geochemistry of the marine sediments which comprise the geology of the area. There are no groundwater supply wells in the area.

According to the State Sources of Drinking Water Policy, Resolution No. 88-63 (see Basin Plan page 5-7), ground waters are excepted from being considered suitable for domestic or municipal supply where the total dissolved solids exceeds 3,000 mg/L and it is not reasonably expected to supply a public water system. Resolution No. 88-63 also excepts ground waters that do not provide sufficient water for extraction of 200 gallons per day. Based on the site-specific data collected in the PSOMAS water quality investigation, the designation of the local groundwater as potential source of municipal or domestic water supply does not appear warranted. Because of the lack of any groundwater uses in the area, this information on groundwater quality conditions would not have been known in the past at the time the Regional Board adopted beneficial use designations for this hydrologic sub-area. It would now be appropriate for the Regional Board to recognize the naturally occurring water quality conditions in the project area that would exclude the groundwater as a viable source of municipal or domestic drinking water in accordance with the provisions of Resolution No. 88-63.

Wastewater Flows

Under Prohibitions A.8 and A.9, the WDR proposes to convert the reported seasonal average wastewater flows to daily maximum flow limitations. It is very likely that this is simply an oversight by the authors of the permit, since it does not conform with basic understanding of sanitary engineering principles. Wastewater flows vary through out the day, from day to day, seasonally and in response to infiltration/inflow effects. State Water Board Order 97-10-DWQ, for example, finds that wastewater flow estimation based on monthly readings is appropriate for septic tank-soil absorption systems covered by the State's General Permit (i.e., flows up to 20,000 gpd). Subsurface wastewater disposal systems which rely upon absorption and dispersion in the soil as part of the treatment process, perform in response to average flow conditions (e.g., over several weeks time), not to daily flows. According to the PSOMAS report, the wastewater flows at the El Morro facility are not unusual; they are reported to average less than 190 gpd per connection during the dry season, increasing to about 225 gpd per connection in the wet season. These flow rates are less than the typical design standard for mobile home parks. I could find no technical justification in the proposed order or background information to

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indicate why the estimated average seasonal flows should be established as the daily maximum limitation.

Septic Tank Effluent Limitations

Discharge Specification B.2 requires that average effluent quality from the septic tanks be equal to or better than drinking water quality standards for several constituents, including total dissolved solids, total nitrogen, MBAS, chloride, manganese, sulfate and iron. The order also specifies the daily limit for total nitrogen less than the drinking water standard for nitrate-nitrogen (7.0 vs the standard of 10 mg/L). These effluent limitations are not attainable and are not consistent with stated procedures and considerations used in establishing effluent limitations for wastewater discharges to land, as noted below.

Treatment Capabilities. Septic tanks are primary wastewater treatment systems and have no capability to produce effluent quality based on drinking water standards. Compliance with any of these limitations would be purely happenstance. The proposed establishment of these limits conflicts directly with the Basin Plan, on page 4-22 and 4-23, which states that waste discharge requirements for domestic wastewater discharges to land contain effluent limitations based on, among other things, "The treatment capability of the treatment process employed by the dischargers". In septic tank soil absorption systems, the septic tank is only an intermediate stage in the treatment process. The soil environments plays a critical role in providing for physical, chemical and biological renovation of the percolating wastewater effluent. The establishment of effluent requirements at a mid-point in the overall treatment process ignores the basic principles of operation of this type of system. For example, State Water Board Order 97-10-DWQ recognizes this and does not specify effluent quality requirements for septic tanks for systems covered by the General Permit.

Assimilative Capacity. The Basin Plan also states on pages 4-22 and 4-23 that effluent limitations for land based discharges of domestic wastewater be based on the assimilative capacity of the receiving water. The proposed limits appear to simply apply the receiving water (groundwater objectives) directly to the septic tank effluent without consideration of the assimilative capacity of either the soil or the receiving water. The detailed water quality investigation conducted by PSOMAS at the request of the Regional Water Board provided substantial evidence of the assimilative capacity of the receiving environment in the area of the El Morro Trailer Park wastewater disposal fields. An example of how the assimilative capacity is commonly incorporated into requirements for subsurface wastewater disposal systems is to establish a permissible tolerance or change in water quality between upgradient/upstream and downgradient/downstream reference points. Another example from the North Coast Regional Water Board's Basin Plan states the following with respect to nitrate limitations:

"On-site systems shall not cause the groundwater nitrate concentration to exceed 10.0 mg/L as N at any source of drinking water on the property nor at any off-site potential drinking water source."

Similar language to the above has been proposed for adoption in the State regulations under AB 885.

Beneficial Uses. Consideration of past, present and probable future beneficial uses is required under the Water Code, and listed in WDR Finding #23. The septic tank effluent limitations are apparently based on the assumption that groundwater in the area is suitable for municipal or domestic water supply based on beneficial use designations in the Basin Plan for the hydrologic sub-area. However, based on

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the findings of the water quality investigation by PSOMAS, it is clear that the groundwater is not suitable for these beneficial uses. It is appropriate for the proposed WDR to recognize and state that "past, present or probable future beneficial uses" do not include municipal or domestic water supply in any area that could potentially be impacted by the discharge. This would then form the basis for revising the discharge specifications to provide a more realistic relationship to the receiving environment. The Basin Plan provides (see page 2-2 and 2-3) that beneficial use designation may be removed as a result of naturally occurring pollutant concentrations that prevent attainment of the use, which applies in this instance.

Other Factors Affecting Water Quality Conditions. The Water Code and WDR Finding #23 also require that "all factors that affect water quality in the area" be considered in setting waste discharge requirements for attainment of water quality objectives. In this case, the water quality investigation by PSOMAS has shown convincing evidence that the geology is the dominant factor affecting mineral quality of the groundwater and surface waters of the area, such that the water quality objectives established (based on protection of municipal and domestic water supply uses) are not attainable. The proposed discharge specifications do not properly consider this factor.

Technical Rationale. In addition to questioning the procedures used to derive the proposed discharge specifications, there doesn't appear to be a sound technical rationale or explanation for any of the specific numeric limits (e.g., average total nitrogen concentration of 3.9 mg/L). Given that the El Morro Trailer Park is an existing facility that has been in operation for more than 40 years it is reasonable and safe to conclude that the water quality conditions and impacts (existing and potential) of the discharge have long since been established. The PSOMAS study included detailed investigation to determine and describe the ambient conditions. Other water quality monitoring work by the County and others adds to what is known. Given these circumstances, it should be relatively straightforward to examine the data, identify any actual impacts, and prescribe requirements to address any identified problem areas. There is no need to hypothesize about cumulative impacts or risks to the environment, since they have been demonstrated through many years of continuous operation, and they should be observable from the monitoring results.

Summary

In my experience as a former regulator and as a current consultant-practitioner in the area of onsite wastewater and water resources management, the proposed WDR for the El Morro Trailer Park has a number of shortcomings related to the application of water quality control policies and technical considerations. The requirements appear to be proposed as a de-facto prohibition of discharge, without full consideration of provisions of the Water Code and Regional Board's own Basin Plan. The proposed requirements are not consistent with the regulation of onsite sewage treatment and disposal systems elsewhere in California, at the State or Regional Board level, and appear to be seriously lacking in technical rationale.

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I trust this is the information you require at this time. If there are questions or if I can be of further assistance, please don't hesitate to call.

Sincerely,


Norman N. Hantzsche, P.E.
Principal/Managing Engineer

Attachments (Resume for Norman Hantzsche)

cc: Wayne Rosenbaum, Foley & Lardner

NH/th

Ref: 230222L.I



NORMAN HANTZSCHE, P.E.
Principal/Managing Engineer

B.S., Civil Engineering, Stanford University, 1971

M.S., Civil Engineering, University of California, Davis, 1973

Registered Civil Engineer in California, 1975

Mr. Hantzsche has nearly 30 years of professional experience in hydrology, water resources and environmental engineering, as a consultant since 1979 and before that on the staff of the California State and Regional Water Quality Control Boards. For the past 20-plus years he has specialized in the field of small-scale and on-site wastewater management, including: (a) university research; (b) development of regulatory policies and siting, design and monitoring standards; (c) planning and design of conventional and alternative systems for individual residences, commercial and institutional facilities, and small communities; (d) assessment of cumulative watershed and groundwater impacts; (e) facilitation of training workshops; (f) expert witness testimony; and (g) contributions to professional associations and literature.

Representative Assignments

- Project Manager/Engineer (on-going) for field investigation, planning and design of individual and small community wastewater treatment and disposal systems for more than 1,000 individual residences, campgrounds, resorts, unsewered communities, schools and commercial establishments throughout California. Projects range in scale from single family residential systems to 600-home community system, including full range of on-site treatment and disposal technologies in current use.
- Project Manager for Small Community Grant funded feasibility study, environmental impact report, engineering design, construction management and on-going monitoring/consultation for 60-home on-site STEP collection system and community leachfield system for Lake Canyon Community Services District, located near Los Gatos in Santa Clara County.
- Field investigation, planning and evaluation of area-wide management programs for on-site wastewater disposal at Stinson Beach (Marin County), The Sea Ranch (Sonoma County), San Lorenzo Valley (Santa Cruz County), Town of Paradise (Butte County), and Malibu (Los Angeles County).
- Consultant to local health departments in California for development of local regulations for on-site sewage treatment and disposal and management programs, including development of design standards and operating permit programs for alternative systems (Calaveras County, Glenn County, Marin County).
- Development of regulatory requirements and procedures for assessing cumulative surface water and groundwater impacts from on-site waste disposal practices in the North Coast Region of California (1982) and in Marin County (1994). Application of groundwater mounding and nitrate loading analysis techniques for dozens of cluster and community-scale on-site wastewater systems throughout California.



- Development of guidelines for pumping tests and hydrological studies for evaluating the adequacy and impacts of new groundwater supplies in the coastal areas of Mendocino County, California; application of procedures for several dozen residential and community water supply projects.
- Principal Investigator for twenty wastewater pollution studies and sanitary surveys in unsewered rural communities in Contra Costa, Lake, Marin, Mariposa, Placer, Santa Clara, Sonoma and Santa Barbara Counties.
- Co-author and spokesperson for 1994 Report of the Technical Advisory Committee for Onsite Sewage Disposal Systems prepared for the State Water Resources Control Board.
- Consultation and expert witness testimony in litigation involving on-site wastewater disposal, groundwater supply and drainage (25+ cases).
- Field investigation and analysis of various non-point source runoff problems, including: (a) bacterial contributions to Humboldt Bay; (b) oil and grease contamination, City of Richmond; and, (c) erosion and agricultural runoff in the San Francisco Bay Area.
- Principal Investigator for 3-year sediment and streamflow monitoring study and watershed erosion surveys for Olema Creek at Point Reyes National Seashore.
- Project Engineer/Hydrologist for assessment of water supply, wastewater treatment/disposal, hydrology and water quality impacts in connection with more than 75 EIR studies for various projects in Northern California. Responsible for investigation and preparation of environmental setting, impacts and mitigation analysis, and response to public and agency comments. Projects evaluated have included rural and urban residential development, commercial developments, wastewater treatment and disposal facilities, pipeline and transmission lines, golf courses, city and county general plans, and specific area/community plans.

Selected Publications

- Ricker, J., N. Hantzsch, B. Hecht, and H. Kolb. Area-wide Wastewater Management for the San Lorenzo River Watershed, California, ASAE - Seventh National Symposium on Individual and Small Community Sewage Systems. Atlanta, Georgia. December 1994
- Hantzsch, N.N. and E.J. Finnemore. Predicting Ground-Water Nitrate-Nitrogen Impacts. Groundwater JI., Vol. 30, No. 4. July-August 1992.
- Hantzsch, N.N., J.E. Smiell, and R.A. Moore. Data Management System for On-Site Wastewater Inspection Program at the Sea Ranch, California. ASAE - Sixth National Symposium on Individual and Small Community Sewage Systems. Chicago, Illinois. December 1991.
- Finnemore, E.J. and N.N. Hantzsch. Ground-Water Mounding Due to On-Site Sewage Disposal. JI. of the Irrigation and Drainage Division, ASCE, Vol. 109, No. 2. June, 1983.



Hantzsche, N.N.. Wetland Systems for Wastewater Treatment: Engineering Applications. Conference Paper - Ecological Considerations in Wetlands Treatment of Municipal Wastewaters. U.S. Fish and Wildlife Service and EPA. University of Massachusetts, Amherst. June 24-25, 1982.

Hantzsche, N.N. and N.J. Fishman. Mound Systems for Cluster Development. ASAE - Third National Symposium on Individual and Small Community Sewage Treatment. Chicago, Illinois. December 1981.

Hantzsche, N.N., W.T. Neikirk and T.J. Wistrom. Soil Textural Analysis for On-Site Sewage Disposal Evaluation. ASAE - Third National Symposium on Individual and Small Community Sewage Treatment. Chicago, Illinois. December 1981.

Hantzsche, N.N., E. Chan, T.A. Bursztynsky and Y.J. Litwin. The Use of Wetlands for Water Pollution Control. U.S. EPA Municipal Environmental Research Laboratory. 1981.

Hantzsche, N.N. and J.B. Franzini. Utilization of Infiltration Basins for Urban Stormwater Management. International Symposium on Urban Storm Runoff. University of Kentucky, Lexington. July 1980.

Hantzsche, N. N., Suitability of Individual Sewage Disposal Systems Along the Lower Russian River, California, Master's Thesis, University of California at Davis, June 1973.

Experience

1982 -present	Principal and Managing Engineer. Questa Engineering Corporation, Point Richmond, California.
1979 - 1982	Senior Civil Engineer, Vice President, Project Manager. RAMLIT Associates, Inc., Berkeley, California.
1975 - 1979	Associate Water Resources Control Engineer. North Coast Regional Water Quality Control Board, Santa Rosa, California.
1973 - 1975	Assistant Engineering Specialist, Sanitary. State Water Resources Control Board, Sacramento, California.
1972 - 1973	Hydrologist. Burgy and Knight Associates, Davis, California.
1972	Teaching Assistant in Hydraulics and Surveying. University of California at Davis, Davis, California.
1970	Engineering Student Trainee - Surveying. State of California, Division of Highways, San Francisco, California.

Professional Affiliations

- California Onsite Wastewater Association (Founding Board Member, Past President)
- National Onsite Wastewater Association
- American Society of Civil Engineers
- Water Environment Federation
- American Water Works Association